Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

extreme. Mr. McNair is the first Englishman who has penetrated into Kafiristan, and even he, owing to the penetration of his disguise through the treachery of a supposed friend of the British government, did not go beyond the outskirts.

The Swat valley, reached by the Malakand pass (3575 feet), has a very rich soil, but is unhealthy. In it are many Buddhist topes, some quite as large as the famous tope of Muni Kiyala. There are also many excavated caves. Colonel Yule (in the discussion which followed Mr. McNair's narrative) stated that this valley, the natives of which had become Afghanized, was eighteen to twenty centuries ago one of the most sacred spots of Buddhism. At Dir Mr. McNair received a seal, which proved to be of Babylonian workmanship.

The Kafirs are ever at war with their Mohammedan neighbors, and are said to pray: "Ward off fever from us. Increase our stores. Kill the Mussulmans. After death admit us to Paradise." Yet many have been, during the course of ages, converted to Islamism. Sir H. Rawlinson said that there was no foundation for the belief that these Kafirs or infidels, as the Pathans called them, were descended from Alexander's soldiers. Their languages are of the Perso-Indian branch of the Aryan family.

The pass leading from Swat valley is 7310 feet above the sea; the fort of Dir 5650 feet; the Lowara Kotal pass, leading to the valley of the Kunar, 10,450 feet; and Chitral, at the head of the Shushai valley, 5151 feet. The dorsal ridge of the Hindu Kush has here a mean elevation of about 16,000 feet, while the Tirach Tir mountain is 25,426 feet high.

GEOLOGY AND PALÆONTOLOGY.

T. S. Hunt on Cambrian rocks of North America.[1]—The writer gave his reasons for limiting the term Cambrian to the Lower and Middle Cambrian of Sedgwick, which contain the first fauna of Barrande. For the Upper Cambrian or Bala group holding the second fauna, wrongly claimed by some as a lower member of the Silurian, and by others called Cambro-Silurian, he prefers the term Ordovician, now accepted by many British and continental geologists. This includes in New York the Chazy, Trenton, Utica and Loraine divisions, the Oneida marking the true Silurian or third fauna. The Cambrian rocks of the great North American basin may be studied in four typical areas: 1. The Appalachian; 2. The Adirondack; 3. The Mississippi; 4. The Cordillera area. To the first of these belongs the immense volume of greatly disturbed sediments along the whole eastern border of the basin, constituting the First graywacke and the Sparry limerock of Eaton, being the Upper Taconic of Emmons, and the Potsdam group and Quebec group of Logan.

---

[1] Abstract. Read before Boston Soc. Nat. History, Feb. 20, 1884.

They are distinct from the unconformably underlying Taconian quartzites, marbles and schists (Lower Taconic) which the author regards as Precambrian, and the still older crystalline schists of the Atlantic belt, including those, chiefly of Huronian age, which have been called "Altered Quebec group." The name of Taconic cannot be retained for the Appalachian Cambrian, which was, as early as 1861, correctly claimed by Emmons as belonging to the period of the first fauna. The Hudson River group, as originally defined, included the whole of the Appalachian Cambrian, with some portions of the underlying Taconian, and others of overlying Ordvician strata, from which in the Appalachian area their characteristic limestones are wholly or in great part absent. It is from solely this association with the Cambrian graywacke of strata of Loraine age that the Hudson River group has come to be regarded as the palæontological equivalent of the Loraine.

In the stable and little disturbed area around the Adirondack mountains, including the Champlain and Ottawa basins, the Cambrian is represented only by the quartzites and magnesian limestones of the Potsdam and Calciferous divisions, which are shallow-water deposits, corresponding apparently to small portions only of Cambrian time. The physical conditions of the Mississippi area appear to have been similar to that of the Adirondack region. As seen to the west of Lake Superior the lowest Potsdam beds of Hall rest unconformably upon the great Keweenian or copper-bearing series. This, although containing, as the speaker had elsewhere shown, some evidence of organic life, probably worm-burrows and sponges, cannot be claimed for the Cambrian till it shall have been shown to contain a Cambrian fauna. In this north-western area we find, moreover, beneath the Cambrian horizon, representatives of the Laurentian and of the Norian. The latter in the typical norites or so-called gabbros, which, near Duluth, are directly overlaid by the Keweenian, elsewhere resting on Laurentian or on Huronian rocks. There also are found in Wisconsin petrosilex rocks of Arvonian type, with quartzites, rising from beneath the Cambrian sandstones. Typical Montalban and Huronian rocks also occur around this area, besides the group which the speaker long since called Animikie. This great series, of many thousand feet, which is overlaid unconformably by the Cambrian sandstones, and also, according to Irving, by the Keweenian, consists chiefly of quartzites and argillites with beds of magnetite. The remains of a sponge have been detected in a calcareous mass got by the speaker at Thompson, Minn., from the argillites of this series, which, in a late communication to the National Academy of Science, he has referred to the Lower Taconic or Taconian horizon. He now stated his conclusion, drawn from various facts, that while these Animikie rocks rest unconformably in this region upon the Huronian, the two series have hitherto been confounded under the common name of Huronian.

As regards the Cambrian of the fourth area, that of the Cordilleras, the speaker alluded to the important observations of Powell and the recent studies of Walcott. Great local variations may here be looked for, and discoveries which will enable us to understand better the relations between the Appalachian Cambrian and the other areas mentioned, as well as those on the Atlantic coast in Massachusetts, New Brunswick and Newfoundland.

THE GEOLOGY OF ALGIERS—FORMATIONS BELOW THE TERTIARY. —In a recent issue of the *Annales des Sciences Geologiques*, M. A. Peron describes, with great thoroughness, the geology of Algiers. The great geographical feature consists of two parallel chains of mountains, bearing from W. 17° N. to E. 17° S. These mountains were uplifted in the Quaternary age, so that, as in the Alps, the Tertiary strata have been disturbed, and contribute to the formation of the mountains. Between these two parallel ranges lie an elevated zone of plateaus, which was uplifted at the same time. To the south of the southern crest extends an immense region through which the strata lie horizontally. This is the Algerian Sahara. Beyond this, on the confines of the Soudan, traces of dislocation appear, with eruptive rocks, and some vegetation. The different geological strata are disposed in long belts parallel to the coast, and the same arrangement obtains in Tunis and Morocco. The country is thus divided into zones, bearing each its distinct soil and climate, productions and people. The principal axis of the Algerian chain is that of the north, and it is this which has determined the direction of the Mediterranean coast. Previous to the uplift of the mountains, repeated and considerable outflows of igneous rocks had taken place, but the greatest outflow occurred in the Quaternary epoch. A great part of the effects of this plutonic outburst are hidden beneath the sea, but the northern coast of Sicily to the east, and Madeira to the west, are in the line of the basalts of the African coast. The rivers which flow northward and southward all have their origin in the plateau region between the two chains of mountains, and no visible crest separates streams running in opposite directions. Every one of these streams has to pass across the mountains, and hence results the multitude of gorges by which these chains are intersected. The oldest strata are crystalline schists, granite gneiss, mica schist, etc. These occur upon the coast, and form mountain masses or islands. Palæozoic strata are not extensive, but are most developed in the province of Oran. Some schists, with vegetable impressions, graphitic schists, etc., are referred to the Silurian, and the puddingstones and conglomerates with polyps, encrinites and foraminifera of the environs of Ain-Talba, are referred to the Carboniferous by M. Bleicher. The Devonian does not seem to be represented in Algiers, though it undoubtedly occurs in Fezzan. No traces of the Permian have yet been found, and the identification of certain beds with the Triassic rests solely upon their position below the Jurassic, and has no palæontological proof. Most of the horizons of the Jurassic are represented, but organic remains are rare, and the strata are sometimes metamorphic. The oldest Jurassic strata exist in the mountain region, and are marked by characteristic species. The Upper Jurassic (*corallien*) appears to form a long band running from east north-east to south-south-west across the high plateaus. The Neocomian, or Lower Cretaceous, is met with in the Tell, or mountain region, in the high plateaus, and as far as the confines of the Sahara, yet does not occupy large areas. The Urgo-Aptien (as our authority styles the strata between the Neocomian and the Gault), occupies large areas in the south of the country. The Gault (*Albien*) acquires in Algiers a thickness of 150 to 300 meters, and is in great part composed of rocks deposited mechanically. It presents distinct characters in different parts, and is tolerably rich in fossils. The Cenomanian is one of the most important and widely spread formations of Algiers, reaches a thickness of 500 meters, and enters into the formation of almost all the mountain masses, except those of the coast. Wherever this formation extends the surface of the country is particularly uneven, full of ravines and peaks, or rocky crests of difficult ascent, and almost completely sterile. These strata are as poor mineralogically as agriculturally, but fortunately they are extremely rich in fossils. Though the Cenomanian occurs in the north, its greatest development is in the parallel chains which separate the long depression of the chotts from the Sahara.

The Turonian is also extensive. It is composed of a considerable mass of limestone with *Rudistes*, and of some other beds between this and the Cenomanian. It occurs in the Tell, or northern mountain region, in the high plateaus, and in the Sahara. The Senonian, or Upper Chalk, is utterly unlike the parallel stage in France. It is composed of marls and limestones, usually almost black, and the fossils consist to a large extent of gastropods and lamellibranchs, especially oysters, and echini. In the 400 meters of this stage neither sandstone, sand, dolomite, flint, nor chalk are met with. The whole appears to have been deposited in a deep and quiet muddy sea, under similar conditions, for the facies of the fossils is pretty much the same throughout the various beds, and though individuals are plentiful, specific types are few. Polyps, sponges, polyzoa and brachiopods are entirely absent. Rudista are very rare, and cephalopoda represented by but few species, principally of Ceratites.

THE SKULL OF A STILL LIVING SHARK OF THE COAL MEASURES.—The genus Didymodus is a well-known form of Elasmobranchi of the Coal Measures, and I have reported it as occurring also in the Permian. Mr. S. Garman has recently published an account of a shark supposed to have been taken off the coast of Japan, which he names *Chlamydoselachus anguineus*,[1] referring it to a new genus and family. He figures the teeth, and these are, as I have pointed out,[2] identical with those of the genus above-named.[3] The species should then be called *Didymodus anguineus.*

Crania of species of Didymodus are not uncommon in the Permian formation, and a description of the character of this part of the skeleton forms the subject of a paper recently read by the writer before the American Philosophical Society of Philadelphia.

The palatopterygoid arch is suspended to the postorbital process of the cranium as in the existing Hexanchidæ. The genus would then be referred to the sub-order Opistharthri of Gill, but for the following peculiarities: The skull is segmented, so that cartilage-frontals, parietals and occipitals can be distinguished, together with an element which has the position of the intercalare. The occipital supports a large vertebral cotylus. There are membrane bones extending from the nose over the orbits, which are either supraorbitals or frontals. The tissue of the bones is granular, which leads to the belief that the granular ossification which covers the chondrocranium in recent sharks, penetrated the entire chondrocranium in this genus. Hence the basicranial axis consists of the sphenoid and presphenoid bones. One at least of the nares is on the superior face of the muzzle. The frontal cartilage-bones are elevated and fissured at the posterior extremity, each apex projecting freely upwards and backwards, presenting a certain resemblance to the structure seen in the Lepidosirenidæ.

The structure points to the type from which the true fishes (Hyopomata) diverged from the sharks. The characters are thought to define an order of the sub-class Elasmobranchi, equivalent to all the other known forms. To these two divisions were given the names of Ichthyotomi and Selachii.—*E. D. Cope.*

LESQUEREUX ON CRETACEOUS AND TERTIARY PLANTS.—The eighth volume of the final reports of the U. S. Geological and Geographical Survey of the Territories on the Cretaceous and Tertiary flora of the Western Territories, by Leo Lesquereux, has been in type at the Public Printing-office in Washington for over six months past, and will be issued soon. That it will prove to be a very important contribution to the vegetable palæontology of the United States the following brief synopsis will show:

Besides the description of species, the text gives general remarks on the geology of the Dakota group, on the characters of the plants in regard to climate, and their affinities with forms of succeeding geological periods. A table of distribution, enumerating all the species known until the present time, of the flora of the Cenomanian in Europe, North America and Greenland, points out the relation with the plants of different localities. Atawe for Greenland; Moletin Inedlinberg, Needersham, the Quader sandstone, &c., for Germany; and the Dakota group, with species obtained in Nebraska and Kansas, and those found also in Colorado at the base of the Rocky mountains. The above refers to the first part of the report, the Cretaceous flora, with seventeen plates.

---

[1] Bulletin of the Essex Institute, VOL. XVI.

[2] *Science*, March 7, 1884, p. 274.

[3] Didymodus Cope. Proceedings Academy Philadelphia, 1883, p. 108. Diplodus Agass., name preoccupied in recent fishes.

The second part comprises a revision of the plants of the Laramie group: 1st. Introduction, considering the relations of these plants with those of Europe, to establish the age of the formation. 2d. Descriptions of a few new and well-marked species from very fine specimens, with three plates. 3d. A table of distribution, including only the species of the Laramie group, which in the seventh volume were mingled with those of the other stages of the Tertiary, and were not grouped distinctly enough for the appreciation of the general characters of the flora.

The third part comprises the flora of the Green River group. The characters of the plants separate the formation into the divisions. The plants of the Green River and Alkali stations, and Randolph county, being different, most of them, from those of Florissant, mouth of White river and Elko. The description of the species are illustrated by twenty-one plates, and the relation of the flora with that of the Gypses of Aix, in France, which is considered as lowest Miocene or Oligocene, is indicated. The table of distribution of these plants includes for America those of Florissant, Elko, Green River station, Alkali station, Sage creek, Barrell's springs, in relation with the Miocene of Greenland, Alaska, the Oligocene of France and Germany, and the Miocene of Europe. The table is followed by general remarks and conclusions derived from the comparisons.

The fourth part relates to Miocene plants described from specimens received from the Bad Lands, California, Oregon, and Alaska; three (3) different groups considered separately. The illustrations fill fifteen plates, and one plate for a few species from a more recent Tertiary formation of California, probably Pliocene. The table of distribution indicates the relation of the species of Alaska, Carbon, Washakie, the Bad Lands, Oregon, California, Fort Union group, with the Arctic Miocene, Greenland, Spitzbergen and that of Europe.

This eighth volume is a complement of the two preceding, the sixth and seventh. It describes, figures or enumerates all the plants which have been found up to the present time in the formations of Mesozoic and Cenozoic epochs of North America, and, therefore, contains most valuable materials in vegetable palæontology for the direction of future researches, and the classification and determination of the fossil flora of the continent.—*F. V. Hayden.*

GEOLOGICAL NOTES.—*General.*—The *Revue Scientifique* (Jan. 19) contains a geological map and description of Borneo, according to the recent explorations of Dr. T. P. Tivadartol. Situated in the midst of a volcanic region, this great island contains no active volcano. The five central mountain chains, which radiate from a common center and attain some 4000 meters in height, consist of amphibole-gneiss, mica-schist, and talc-schist, with intercalations of peridote and serpentine, very strongly folded. The cincture of undulating hills around these mountains is arenaceous, and is believed to be eocene, and the vast plains between these hills and the sea consist of ancient and modern alluvium. Some arenaceous clays, impregnated with salt, serving as a substratum to the vast salt-marshes of the lower parts of the island, seem older than the eocene hills, and may be of secondary age.——The Alps of New Zealand, according to Mr. Green, were probably uplifted in Jurassic times. The oldest rocks—granites (or possibly in part granitoid gneisses) appear on the western side; these are overlain by crystalline schists, to which succeed slates, grits, etc., of Silurian and later ages. The highest rock on Mount Cook (12,349 feet) appears to be a quartzite, and Mr. Green mentions the occurrence of some volcanic tuffs lower down the mountain. ——Mr. E. T. Hardman has obtained the data for a geological sketch-map of 12,800 square miles in the Kimberley district of Western Australia. The lowest rocks are quartzites, schists and other metamorphic rocks, which he provisionally classes as Lower Silurian, but which may be Archæan. These are succeeded by limestones and sandstones with gypsum, etc., supposed to be Upper Carboniferous. The newest deposits are Pliocene sands, gravels, conglomerates, and marley limestones (called "pindar" by the natives), overlaid by river gravels, extensive plains of alluvium, and, along the sea-coast, by raised beaches. Certain basalts and felstones of uncertain age also occur.——The report of the Geological Survey of Prussia, for 1882, contains twenty-two important papers, by members of the staff and others, with twenty-three plates of maps, sections and fossils.

Cretaceous.—M. Sintsoff has contributed to the Novorossian Society of Naturalists, at the University of Odessa, a monograph of the sponges from the chalk of Soratoff. He describes a number of new species and four new genera. The same author has also a paper on Mesozoic fossils from Simbirsk and Saratoff in which he describes two species of Ammonites, *Aporrhais striatocarinata*, and several other mollusca.

Tertiary.—M. Sintsoff has described several tertiary mollusks of Novorossia, including species of Dreissena, Hydrobia, Neritinia, Valvata, Trochus, Amnicola, and Phasianella.——M. Cotteau has determined twenty-one species of Echinidæ from the tertiary strata of St. Valois (Seine Inferieure). Eight of these have been found at other localities, in the Lower Eocene. Among the most interesting of the peculiar forms the author mentions *Goniopygus pelasgiensis*, the last representative of a genus abundantly diffused in the various stages of the cretaceous; *Sismondia archiaci*, which d'Archiac had erroneously united with *Echinocyamus subcaudatus* of the tertiary of Antibes (Var), but which differs from that species in the constant position of its periproct and other characters; and *Gualtiera orbignyi*, a type remarkable for its ovoid, posteriorly truncated form, by the arrangement of its ambulacral areas, which are severed at two-thirds of their length by an internal fasciole, and above all, by the protuberances which surround the peristome, and are prolonged along the center of the posterior interambulacral area. For these strata echini predominate, and other fossils are represented only by a few mollusks.——Mr. Thomas has recently studied the terrestrial and lacustrine tertiary and quaternary beds of Algeria, and has established several horizons, well characterized by the numerous fossils contained in them. Mr. Thomas has found some new mollusks, but has given his attention principally to mammals and has enriched palæontology with many new species. Among these is a Cynocephalus, three species of antelope, and a hipparion, the bones of which were associated with those of the horse, instead of preceding it, as is the case in Europe. All these are from the Pliocene.

Quaternary.—In the quaternary of Algiers, Mr. Thomas has found numerous flint implements, and remains of various animals. These include a rhinoceros, which, to judge from a molar, is *R. tichorhinus*, *Bubalus antiquus*, the horns of which measured ten feet between the points; *Bos primigenius mauritanicus*, two antelopes, a sheep, a mouflon, a camel nearly related to the dromedary, and an ass (*Equus asinus atlanticus*), which, in its dentition, preserves some resemblance to Hippotherium.

MINERALOGY[1].

An Interesting Mineral from Canada.—The writer has given a preliminary notice of a very interesting mineral from Wakefield, Ontario, Canada. It occurs as white or grayish-white square crystals, sometimes an inch in breadth, and often glazed on the outside. They are nearly square prisms with truncated corners, the general appearance being that of a partly altered scapolite.

They are tetragonal, with $O \wedge 2 = 129\frac{1}{2}^{\circ}$. The angles, as pointed out to the author by Professor E. S. Dana, are closely similar to those of *sarcolite*, the following planes being identified: O, i-i, I. 2, 2-i, 2-2, 6-3, the last two hemihedral. The mineral

---

[1] Edited by Professor H. Carvill Lewis, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.

[2] Proceedings Mineralogical and Geol. Section, Acad. Nat. Sciences, Nov. 26, 1883.